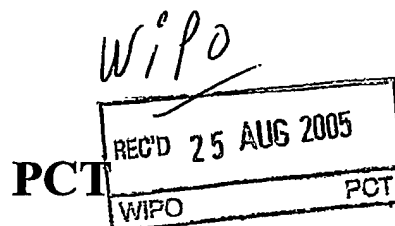


# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY



To:  
**SMART & BIGGAR**  
Box 11560 Vancouver Centre  
2200 - 650 W. Georgia Street  
VANCOUVER, British Columbia  
Canada, V6B 4N8

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing      17 August 2005 (17-08-2005)  
(day/month/year)

Applicant's or agent's file reference  
83372-4

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
**PCT/CA2005/000654**

International filing date (day/month/year)  
29 April 2005 (29-04-2005)

Priority date (day/month/year)  
29 April 2004 (29-04-2004)

International Patent Classification (IPC) or both national classification and IPC  
IPC(7): C22B 3/22, C22B 3/06, C01G 49/06, C22B 3/44, C22B 7/02

Applicant  
**METALOX INTERNATIONAL ET AL**

1. This opinion contains indications relating to the following items :

- |   |              |  |
|---|--------------|--|
| <input checked="" type="checkbox"/> [ X ] | Box No. I    | Basis of the opinion   |
| <input type="checkbox"/> [ ]              | Box No. II   | Priority   |
| <input type="checkbox"/> [ ]              | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability   |
| <input type="checkbox"/> [ ]              | Box No. IV   | Lack of unity of invention   |
| <input checked="" type="checkbox"/> [ X ] | Box No. V    | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> [ ]              | Box No. VI   | Certain documents cited  |
| <input type="checkbox"/> [ ]              | Box No. VII  | Certain defects in the international application   |
| <input checked="" type="checkbox"/> [ X ] | Box No. VIII | Certain observations on the international application  |

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/CA  
Canadian Intellectual Property Office  
Place du Portage I, C114 - 1st Floor, Box PCT  
50 Victoria Street  
Gatineau, Quebec K1A 0C9  
Facsimile No.: 001(819)953-2476

Date of completion of this opinion  
2 August 2005 (02-08-2005)

Authorized officer  
**Jay Fothergill (819) 997-4842**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/CA2005/000654

Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ on paper

☐ in electronic form

c. time of filing/furnishing

☐ contained in the international application as filed.

☐ filed together with the international application in electronic form

☐ furnished subsequently to this Authority for the purposes of search.

3 ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statement that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
**PCT/CA2005/000654**

**Box No. V**      **Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims <u>1-27</u>	YES
	Claims <u>none</u>	NO
Inventive step (IS)	Claims <u>5 and 6</u>	YES
	Claims <u>1-4, 7-27</u>	NO
Industrial applicability (IA)	Claims <u>1-27</u>	YES
	Claims <u>none</u>	NO

**2. Citations and explanations :**

D1: US 2,643,204 (Mancke) 23 June 1953 (23-06-1953)  
D2: US 2,762,703 (Mancke) 11 September 1956 (11-09-1956)  
D3: US 2,916,357 (Schaufelberger) 8 December 1959 (08-12-1959)

D4: US 4,414,196 (Matsumoto et al.) 9 November 1983 (08-11-1983)  
D5: US 6,616,747 (Sumita) 9 September 2003 (09-09-2003)

D6: US 4,097,271 (Swinkels et al.) 27 June 1978 (27-06-1978)  
D7: US 4,282,190 (Müller et al.) 4 August 1981 (04-08-1981)  
D8: CA 2,156,295 (McElroy) 1 September 1994 (01-09-1994)

Documents D1, D2 and D3 show that the high pressure precipitation of iron (III) from nitrate/nitric acid solution has been known for many years. The choice of a seeding ratio for using seed to precipitate the ferric oxide is not taught.

D4 teaches the precipitation of ferric oxide from an aqueous suspension of ferric hydroxide with the addition of alpha-Fe<sub>2</sub>O<sub>3</sub> seed crystals. The reaction temperature is between 100 and 250°C and usually takes place in a closed vessel such as an autoclave, but it teaches away from high pressure operation stating "there is no particular need to carry out the reaction under an increased pressure." The process operates at alkaline condition through the addition of sodium hydroxide, potassium hydroxide or ammonia.

The process of D5 uses seed crystals to precipitate ferric oxide (hematite) from solution in an open reactor at atmospheric pressure. In the discussion of the prior art, the document teaches that high pressure production of hematite is known from various sources (e.g. Japanese patent publication [KOKOHU] No.35-1224) and established in this field of technology, similar to D1, D2 and D3. The inventive process of D5 obviates the need for a high cost autoclave and instead uses an open reactor with the addition of seed for promoting precipitation.

Documents D6, D7 and D8 teach the high pressure precipitation of ferric oxide from different solutions, but without employing a seeding ratio or seed particles.

**Novelty**

The novelty of claim 1 is preserved as none of the prior art documents teach a combination of high pressure and choosing a seeding ratio for precipitating ferric oxide. Accordingly, the present claims comply with PCT Article 33(2).

(Continued in supplemental box)

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/CA2005/000654

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made :

Claim 2 does not comply with rule 6.4 of the PCT for failing to further define claim 1. The claim only teaches the definition of the seeding ratio as defined in claim 1. This seeding ratio is taught in the description and is the only such definition stated. By defining this ratio in a dependent claim, it calls into question whether other definitions of the seeding ratio are possible. Other definitions, however, would fail to be supported by the description. The claim should be incorporated into claim 1 or deleted.

Claims 20-25 and 27 do not comply with PCT Article 6 because only the desired result is stated, rather than the procedural steps required to achieve this result. The claims define physical attributes of the produced precipitates.

The description does not comply with PCT Article 5. A statement in an application, such as found on page 1, which indicates that the application continues from a referenced document, should be removed. A continuation-in-part does not form part of the PCT.

No continuity exists between pages 24 and 25 of the description. Accordingly, a sentence fragment is present at the end of page 24, which does not comply with PCT Article 5.

The drawings and/or description do not comply with Rule 11.13(l) of the Patent Cooperation Treaty Regulations. Reference signs not mentioned in the description shall not appear in the drawings, and vice versa. On page 16, the items "filtrate, F,...evaporated 140" do not appear in drawings.

WRITTEN OPINION OF THE  
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International application No.  
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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of:      **Box no. V**

**Inventive Step**

Claim 1 does not appear to be inventive and fails to comply with PCT Article 33(3) as D4 clearly contemplates the use of high pressure, and would achieve superatmospheric pressures by keeping the autoclave sealed and autogenously running at the temperatures disclosed. The author chooses not to operate at the elevated pressure. Claim 2 adds no inventive subject matter as it is merely defining the basis for the term "seeding ratio." Claims 3,4 and 7-12 do not appear to add inventive subject matter as they are either disclosed by D4 or would be regular operating ranges, as established by the prior art.

Claims 13 and 14 depart from the teachings of D4 by using an acid system. The prior art teaches acidic systems but has not employed the seed addition as taught by D4. D5 teaches that the state of the art has developed to move away from high pressure systems and employs an acidic system with seed addition. Accordingly, it cannot be considered inventive to return to the high cost of high pressure systems.

Claims 15-27 appear to be standard operating conditions for the field of technology or pertain to desired results of the quality of ferric oxide produced.

Claim 1 does not appear to be inventive and fails to comply with PCT Article 33(3) in light of D5 taken with any of D1, D2, D3, D6, D7 or D8. The prior art discussion of D5 makes it clear that high pressure systems have been employed in the past for the precipitation of ferric oxide. The inventive process of D5 simplifies the operating equipment and employs seed. However, it would be obvious to one skilled in the art that the seeding technique could be used with the traditional high pressure systems, such as taught in the discussion of the prior art or by any of documents D1-D3 or D6-D8. Many of the dependent claims lack an inventive step in light of D5 taken together with the other cited documents.

Claims 5 and 6 define seeding ratios, which are not found in the prior art. The way in which the ratios are defined, as taught in claim 2 and the description, makes their verification difficult. As these ratios are not fairly taught in any of the prior art documents, or a combination thereof, the claims can be considered inventive.

**Industrial Applicability**

Claims 1-27 are industrially applicable and comply with PCT Article 33(4).